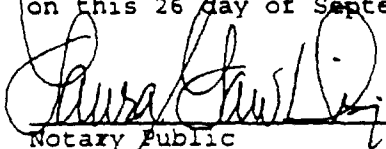
 26 Sept 1997

Jerry Hausman

Subscribed and sworn to before me
on this 26 day of September, 1997.



Notary Public

My Commission Expires: 7/3/98

September 1997

JERRY A. HAUSMAN
Massachusetts Institute of Technology
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EDUCATION:

OXFORD UNIVERSITY
D. Phil. 1973 (Ph.D)
B. Phil. 1972

BROWN UNIVERSITY
A.B. (Summa Cum Laude), 1968

THESIS: "A Theoretical and Empirical Study of Vintage Investment and Production in Great Britain."
Oxford University, 1973.

FELLOWSHIPS, HONORS AND AWARDS:

Phi Beta Kappa
Marshall Scholar at Oxford, 1970-1972
Scholarship at Nuffield College, Oxford, 1971-1972
Fellow of Econometric Society, 1979.
Frisch Medal of the Econometric Society, 1980
Fisher-Schultz Lecture for the Econometric Society, 1982
John Bates Clark Award of the American Economic Association, 1985
Jacob Marschak Lecture for the Econometric Society, 1988
American Academy of Arts and Sciences, 1991.

EMPLOYMENT:

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
1992- John and Jennie S. MacDonald Professor
1979- Professor, Department of Economics
1976-79 Associate Professor, Department of Economics
1973-76 Assistant Professor, Department of Economics
1972-73 Visiting Scholar, Department of Economics

VISITING APPOINTMENTS:

1986-87 Visiting Professor, Harvard Business School
1982-83 Visiting Professor, Harvard University Department of Economics

U.S. ARMY, ANCHORAGE, ALASKA
1968-70 Corps of Engineers

PROFESSIONAL ACTIVITIES:

Associate Editor, Bell Journal of Economics, 1974-1983
 Associate Editor, Rand Journal of Economics, 1984-1988
 Associate Editor, Econometrica, 1978-1987
 Reviewer, Mathematical Reviews, 1978-1980
 American Editor, Review of Economic Studies, 1979-82
 Associate Editor, Journal of Public Economics, 1982-
 Associate Editor, Journal of Applied Econometrics, 1985-1993
 Member of MIT Center for Energy and Environmental Policy Research, 1973-
 Research Associate, National Bureau of Economic Research, 1979-
 Member, American Statistical Association Committee on Energy Statistics, 1981-1984
 Special Witness (Master) for the Honorable John R. Bartels, U.S. District Court for the
 Eastern District of New York in Carter vs. Newsday, Inc., 1981-82
 Member of Governor's Advisory Council (Massachusetts) for Revenue and Taxation,
 1984-1992
 Member, Committee on National Statistics, 1985-1990
 Member, National Academy of Social Insurance, 1990-
 Member, Committee to Revise U.S. Trade Statistics 1990-1992
 Director, MIT Telecommunications Economics Research Program, 1988-
 Board of Directors, Theseus Institute, France Telecom University, 1988-1995
 Member, Conference on Income and Wealth, National Bureau of Economic Research, 1992-

PUBLICATIONS:

I. Econometrics

- "Minimum Mean Square Estimators and Robust Regression," Oxford Bulletin of Statistics, April 1974.
- "Minimum Distance and Maximum Likelihood Estimation of Structural Models in Econometrics," delivered at the European Econometric Congress, Grenoble: August 1974.
- "Full-Information Instrumental Variable Estimation of Simultaneous Equation Models," Annals of Economic and Social Measurement, October 1974.
- "Estimation and Inference in Nonlinear Structural Models," Annals of Economic and Social Measurement, with E. Berndt, R.E. Hall, and B.H. Hall, October 1974.
- "An Instrumental Variable Approach to Full-Information Estimators in Linear and Certain Nonlinear Econometric Models," Econometrica, May 1975.
- "Simultaneous Equations with Errors in Variables," delivered at Winter Econometric Meetings, San Francisco: December 1974; published in Journal of Econometrics 5, 1977, pp. 389-401.
- "Social Experimentation, Truncated Distributions, and Efficient Estimation," delivered at the World Econometric Congress, Toronto: August 1975; Econometrica, with D. Wise, June 1977.
- "A Conditional Probit Model for Qualitative Choice," delivered at World Econometric Congress, Toronto: August 1975; MIT Working Paper 173, April 1976; Econometrica, with D. Wise, March 1978.

PUBLICATIONS cont.:

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- "Non-Random Missing Data," with A.M. Spence, MIT Working Paper 200, May 1977.
- "Attrition Bias in Experimental and Panel Data: The Gary Income Maintenance Experiment," with D. Wise, J.F. Kennedy School Working Paper, May 1977; Econometrica, January 1979.
- "Missing Data and Self Selection in Large Panels," with Z. Griliches and B.H. Hall, Harvard Economics Department Working Paper, August 1977; delivered at INSEE conference on Panel Data, Paris: August 1977; Annales de l'INSEE, April 1978.
- "Stratification on Endogenous Variables and Estimation," with D. Wise, J.F. Kennedy School Working Paper, January 1978; delivered at CME Conference, April 1978; in The Analysis of Discrete Economic Data, ed. C. Manski and D. McFadden, MIT Press, 1981.
- "Les models probit de choix qualitatifs," ("Alternative Conditional Probit Specifications for qualitative Choice.") (English Version), September 1977; EPRI report on discrete choice models, presented at INSEE Seminar, Paris: May 1978; Cahiers du Seminar d'Econometrie, 1980.
- "The Econometrics of Labor Supply on Convex Budget Sets," Economic Letters, 1979.
- "Panel Data and Unobservable Individual Effects," with W. Taylor, MIT Working Paper 225; Econometrica 49, November 1981.
- "Comparing Specification Tests and Classical Tests," with W. Taylor, August 1980, Economic Letters, 1981.
- "The Effect of Time on Economic Experiments," invited paper at Fifth World Econometrics Conference, August 1980; in Advances in Econometrics, ed. W. Hildebrand, Cambridge University Press, 1982.
- "Sample Design Considerations for the Vermont TOD Use Survey," with John Trimble, Journal of Public Use Data, 9, 1981.
- "Identification in Simultaneous Equations Systems with Covariance Restrictions: An Instrumental Variable Interpretation," with W. Taylor, December 1980; Econometrica, 1983.
- "Stochastic Problems in the Simulation of Labor Supply," presented at NBER conference, January 1981; in Tax Simulation Models, ed. M. Feldstein, University of Chicago Press, 1983.
- "The Design and Analysis of Social and Economic Experiments," invited paper for 43rd International Statistical Institute Meeting, 1981; Review of the ISI.
- "Specification and Estimation of Simultaneous Equation Models," in Handbook of Econometrics, ed. Z. Griliches and M. Intriligator, vol. 1, 1983.
- "Full-Information Estimators," in Kotz-Johnson, Encyclopedia of Statistical Science, vol. 3, 1983
- "Instrumental Variable Estimation," in Kotz-Johnson, Encyclopedia of Statistical Science, vol. 4, 1984

PUBLICATIONS cont.:

- "Specification Tests for the Multinomial Logit Model," with D. McFadden, October 1981; Econometrica, 1984.
- "Econometric Models for Count Data with an Application to the Patents R&D Relationship," with Z. Griliches and B. Hall, NBER Working Paper, August 1981; Econometrica, 1984.
- "The Econometrics of Nonlinear Budget Sets," Fisher-Shultz lecture for the Econometric Society, Dublin: 1982; Econometrica, 1985.
- "The J-Test as a Hausman Specification Test," with H. Pesaran, November 1982; Economic Letters, 1983.
- "Seasonal Adjustment with Measurement Error Present," with M. Watson, May 1983; Journal of the American Statistical Association, 1985.
- "Efficient Estimation and Identification of Simultaneous Equation Models with Covariance Restrictions," with W. Newey and W. Taylor, October 1983; Econometrica, 1987.
- "Technical Problems in Social Experimentation: Cost Versus Ease of Analysis," with D. Wise, in Social Experimentation, ed. J. Hausman and D. Wise, 1985.
- "Errors in Variables in Panel Data," with Z. Griliches, Journal of Econometrics, 1986.
- "Specifying and Testing Econometric Models for Rank-Ordered Data," with P. Ruud; Journal of Econometrics, 1987.
- "Semiparametric Identification and Estimation of Polynomial Errors in Variables Models," with W. Newey, J. Powell and H. Ichimura, 1986, Journal of Econometrics, 1991.
- "Flexible Parametric Estimation of Duration and Competing Risk Models," with A. Han, November 1986, revised January 1989, Journal of Applied Econometrics, 1990.
- "Consistent Estimation of Nonlinear Errors in Variables Models with Few Measurements," with W. Newey and J. Powell, 1987.
- "Optimal Revision and Seasonal Adjustment of Updated Data: Application to Housing Starts," with M. Watson, Journal of the American Statistical Association Proceedings, 1991.
- "Seasonal Adjustment of Trade Data," with R. Judson and M. Watson, ed. R. Baldwin, Behind the Numbers: U.S. Trade in the World Economy, 1992.
- "Nonparametric Estimation of Exact Consumers Surplus and Deadweight Loss," with W. Newey, 1992, Econometrica, 1995.
- "Misclassification of a Dependent Variable in Qualitative Response Models," with F. Scott-Morton and J. Abrevaya, mimeo December 1993, revised 1996.
- "Nonlinear Errors in Variables: Estimation of Some Engel Curves," Jacob Marschak Lecture of the Econometric Society, Canberra 1988, Journal of Econometrics, 65, 1995.
- "Semiparametric Estimation in the Presence of Mismeasured Dependent Variables," presented at NSF Conference, 1995, with J. Abrevaya.

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- "Discontinuous Budget Constraints and Estimation: The Demand for Housing," with D. Wise, J.F. Kennedy School Working Paper, July 1977; Review of Economic Studies, 1980.
- "The Effect of Taxation on Labor Supply: Evaluating the Gary Negative Income Tax Experiment," with G. Burtless, October 1977; Journal of Political Economy, December 1978.
- "AFDC Participation -- Permanent or Transitory?," delivered at NBER-NSF Conference, August 1978; in Papers from the European Econometrics Meetings, ed. E. Charatsis, North Holland: 1981.
- "The Effect of Wages, Taxes, and Fixed Costs on Women's Labor Force Participation," March 1979; presented at SSRC-NBER Conference on Taxation, Cambridge, England: June 1979; Journal of Public Economics, October 1980.
- "The Effect of Taxes on Labor Supply," presented at Brookings Conference, October 1979; published in How Taxes Affect Economic Behavior, ed. H. Aaron and J. Pechman, Brookings: 1981.
- "Income and Payroll Tax Policy and Labor Supply," presented at St. Louis Fed. conference, October 1980; in The Supply Side Effects of Economic Policy, ed. G. Burtless, St. Louis: 1981.
- "Individual Retirement Decisions Under an Employer-Provided Pension Plan and Social Security," with G. Burtless, Journal of Public Economics, 1982.
- "Individual Retirement and Savings Decisions," with P. Diamond, October 1981; presented at SSRC-NBER Conference on Public Economics, Oxford: June 1982; Journal of Public Economics, 1984.
- "Retirement and Unemployment Behavior of Older Men," with P. Diamond, presented at Brookings Conference on the Aged, November 1982; in H. Aaron and G. Burtless, Retirement and Economic Behavior, Brookings: 1984.
- "Tax Policy and Unemployment Insurance Effects on Labor Supply," May 1983; in Removing Obstacles to Economic Growth, ed. M. Wachter, 1984.
- "Family Labor Supply with Taxes," with P. Ruud, American Economic Review, 1984.
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- "Involuntary Early Retirement and Consumption," with L. Paquette, ed. G. Burtless, Economics of Health and Aging, 1987.
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- "The Effect of New Services in Telecommunications," Brookings Panel on Economic Activity: Microeconomics, The Brookings Institution, June 1997.
- "Cellular Telephone, New Products and the CPI," National Bureau of Economic Research, Working Paper 5982, March 1997.

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- "Project Independence Report: A Review of U.S. Energy Needs up to 1985," Bell Journal of Economics, Autumn 1975.
- "Individual Discount Rates and the Purchase and Utilization of Energy Using Durables," MIT Energy Laboratory Working Paper, January 1978; Bell Journal of Economics, Spring 1979.
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- "Assessing the Potential Demand for Electric Cars," with S. Beggs and S. Cardell, presented at EPRI Conference, November 1979; Journal of Econometrics, 1981.

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- "Assessment and Validation of Energy Models," presented at EIA-NBS conference on Energy Models, May 1980; in Validation and Assessment of Energy Models, ed. S. Gass, Washington: Department of Commerce, 1981.
- "Exact Consumer Surplus and Deadweight Loss," working paper 1979, American Economic Review, 71, 1981.
- "Appliance Purchase and Usage Adaptation to a Permanent Time of Day Electricity Rate Schedule," with J. Trimble, August 1983; Journal of Econometrics, 1984.
- "Evaluating the Costs and Benefits of Appliance Efficiency Standards," with P. Joskow, MIT Energy Lab Working Paper, MIT-EL82005WP; American Economic Review, 72, 1982.
- "Information Costs, Competition and Collective Ratemaking in the Motor Carrier Industry," presented at Conference On Consensual Decision Making, American University, August 1982; American University Law Review, 1983.
- "An Overview of IFFS," presented at EIA-NBS Conference on Energy Models, August 1982; in Intermediate Future Forecasting System, ed. S. Gass et al., Washington: 1983.
- "Choice of Conservation Actions in the AHS," November 1982; in Energy Simulation Models, ed. R. Crow, 1983.
- "Patents and R&D: Searching for a Lag Structure," with B. Hall and Z. Griliches, in Actes du Colloque Econometrie de la Recherche, Paris: 1983.
- "The Demand for Optional Local Measured Telephone Service," in Adjusting to Regulatory, Pricing and Marketing Realities, East Lansing: 1983.
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- "Price Discrimination and Patent Policy," with J. MacKie-Mason, Rand Journal of Economics, 1988.
- "Residential End-Use Load Shape Estimation from Whole-House Metered Data," IEEE Transactions on Power Systems, 1988 (with I. Schick, P. Vsoro, and M. Ruane).
- "Competition in Telecommunications for Large Users in New York," with H. Ware and T. Tardiff, Telecommunications in a Competitive Environment, 1989.
- "Innovation and International Trade Policy," Oxford Review of Economic Policy, 1988 (with J. MacKie-Mason).
- "The Evolution of the Central Office Switch Industry," with W. E. Kohlberg, 1987; in ed. S. Bradley and J. Hausman, Future Competition in Telecommunications, 1989.
- "Future Competition in Telecommunications," 1987; ed. S. Bradley and J. Hausman, Future Competition in Telecommunications, 1989.
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- "An Ordered Probit Model of Intra-day Securities Trading," with A. Lo and C. MacKinlay, Journal of Financial Economics, 1992.
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- "Global Competition and Telecommunications," in Bradley, et al., ed., Globalization, Technology and Competition, 1993.
- "The Bell Operating Companies and AT&T Venture Abroad and British Telecom and Others Come to the US," presented at Harvard Business Conference on International Telecommunications, 1991, in Bradley, et al., ed., Globalization, Technology and Competition, 1993.
- "The Effects of the Breakup of AT&T on Telephone Penetration in the US," with T. Tardiff and A. Belinfante, American Economic Review, 1993.
- "Competitive Analysis with Differentiated Products," with G. Leonard and D. Zona, Annales, D'Economie et de Statistique, 34, 1994.
- "Proliferation of Networks in Telecommunications," ed. D. Alexander and W. Sichel, Networks, Infrastructure, and the New Task for Regulation, presented at Conference 1994, University of Michigan Press, 1996.
- "Valuation of New Goods Under Perfect and Imperfect Competition," MIT Working Paper, June, 1994, ed. T. Bresnahan and R. Gordon, The Economics of New Goods, University of Chicago Press, 1997.
- "Competition in Long Distance and Equipment Markets: Effects of the MFI," 1994, Journal of Managerial and Decision Economics, 1995.
- "The Cost of Cellular Telephone Regulation," MIT Working Paper, January 1995.
- "State Regulation of Cellular Prices," Wireless Communications Forum, Volume III, April 1995.
- "Efficient Local Exchange Competition," with T. Tardiff, Antitrust Bulletin, 1995.
- "Superstars in the National Basketball Association: Economic Value and Policy," with G. Leonard, Journal of Labor Economics, 15, 4, 1997.
- "Valuation of New Services in Telecommunications," with T. Tardiff, presented at OECD Conference in Toronto, June 1995, The Economics of the Information Society, ed. A. Dumort and J. Dryden, Office for Official Publications of the European Communities, Luxembourg, 1997.
- "Market Definition Under Price Discrimination," with G. Leonard and C. Velturo, Antitrust Law Journal, Vol. 64, 1996.
- "Characteristics of Demand for Pharmaceutical Products: An Examination of Four Cephalosporins," with S. Fisher Ellison, I. Cockburn and Z. Griliches, Rand Journal of Economics, 28, 3, 1997.
- "Telecommunications: Building the Infrastructure for Value Creation," presented at the Harvard Business School Conference, November 16, 1995, forthcoming in ed. S. Bradley and R. Nolan, 1997.

PUBLICATIONS cont.:

- "Achieving Competition: Antitrust Policy and Consumer Welfare," with G. Leonard, World Economic Affairs, Vol. 1, No. 2, 1997.
- "The CPI Commission and New Goods," The American Economic Review, May 1997.
- "Economic Analysis of Differentiated Products Mergers Using Real World Data," with G. Leonard, forthcoming George Mason Law Review, 1997.

JOINT REPORTS, TESTIMONY, AND BOOKS:

- "Project Independence: An Economic Analysis," Technology Review, May 1974.
- "The FEA's Project Independence Report: Testimony before Joint Economic Committee," U.S. Congress, March 18, 1975.
- "The FEA's Project Independence Report: An Analytical Assessment and Evaluation," NSF Report, June 1975.
- "Energy Demand in the ERDA Plan," with D. Wood, Energy Laboratory Report, August 1975.
- "A Note on Computational Simplifications and Extensions of the Conditional Probit Model," EPRI report on choice models, September 1977.
- "Labor Supply Response of Males to a Negative Income Tax," Testimony for U.S. Senate Finance Subcommittee on Public Assistance, November 22, 1978.
- "Appliance Choice with Time of Day Pricing," Energy Laboratory Report, January 1980.
- "Discrete Choice Models with Uncertain Attributes," Oak Ridge National Laboratories Report, January 1980.
- "Individual Savings Behavior," with P. Diamond, Report to the National Commission on Social Security, May 1980.
- "Wealth Accumulation and Retirement," with P. Diamond, Report to the Department of Labor, May 1982.
"A Review of IFFS," Report to the Energy Information Agency, February 1982.
- "A Model of Heating System and Appliance Choice," with J. Berkovec and J. Rust, Report to the Department of Energy, December 1983.
- "Labor Force Behavior of Older Men After Involuntary Job Loss," with L. Paquette, Report to Department of Health and Human Services, December 1985.
- "Pollution and Work Days Lost," with D. Wise and B. Ostrow, NBER Working Paper, January 1984; Revised 1985.
- "Demand for Interstate Long Distance Telephone Service," with A. Jafee and T. Tardiff, November 1985.
- "Competition in the Information Market 1990", August 1990.
- "The Welfare Cost to the US Economy of Regulatory Restriction in Telecommunications," January 1995.

JOINT REPORTS, TESTIMONY, AND BOOKS cont.:

"Benefits and Costs of Vertical Integration of Basic and Enhanced Telecommunications Services," April 1995.

"Statement on the Natural Resource Damage Provisions of CERCLA," Testimony before the U.S. Senate Committee on Environment and Public Works, May 11, 1995; Testimony before the U.S. House of Representatives, Transportation & Infrastructure Committee, Water Resources & Environment Subcommittee, July 11, 1995.

"Competition in Cellular Markets," Testimony before the U.S. House of Representatives, Committee on Commerce, October 12, 1995.

"Merger Policy in Declining Demand Industries," Testimony before the U.S. Federal Trade Commission, November 14, 1995.

"Expected Results from Early Auctions of Television Spectrums," Testimony before the U.S. Senate Budget Committee and the U.S. House of Representatives, Committee on Commerce, March 13, 1996.

The Choice and Utilization of Energy Using Durables, ed. J. Hausman, Palo Alto: EPRI, 1981.

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Economic Impact of Deregulating U.S. Communications Industries, The WEFA Group, Burlington, MA, February 1995.

APPENDIX E

AT&T (T): Meeting with AT&T's Top Management
11:08am EST 19-Dec-97 Janney Montgomery Scott
(Anna-Maria Kovacs 617-227-1514)

--- JANNEY MONTGOMERY SCOTT INC. ---

December 19, 1997 Anna-Maria Kovacs, Ph.D. (617) 227-1514

AT&T (T#-\$59)
Meeting with AT&T's Top Management

EARNINGS PER SHARE (Dec.) 1997 VS 1996									
OLD	NEW	P/E RATIOS		F1QA	\$0.69	VS	\$0.92		
1998E	\$2.60	\$2.95	20.0x	F2QA	\$0.59	VS	\$0.95	1997E	\$2.58 \$2.70
21.9x		F3QA	\$0.71	VS	\$0.84	1996A	\$3.47		F4QE
\$0.71	VS	\$0.76							

Yield: 2.68% Market Cap.: 64,863(000) Dividend: \$1.32 Rating: HOLD

We met yesterday with AT&T's new Chairman and its CFO, Michael Armstrong and Dan Somers. Mr. Armstrong is clearly very smart and energetic. He pulled off a turn-around at Hughes and did wonders for its stock. At least initially, he appears to be looking to replicate that strategy of cost cutting, divestitures, and acquisitions. The issue, of course, is one of scale and timing. AT&T is much bigger, has an extraordinarily strong immune system that rejects outsiders rapidly, and will come under tremendous pressure in its core business very soon.

Mr. Armstrong is looking for ways to grow AT&T and improve its profitability. He is trying to focus the company on the best opportunities, both in terms of direction and customer segments. He sees a number of areas of great opportunity, but also sees numerous internal and external problems. He believes that the company suffers from an inordinately high cost structure, bureaucracy and indecision, and long cycle times in executing decisions. It is our sense that believes he needs 18-24 months to "get our act together," and that he is hoping that regulators will give AT&T that long before any Regional Bells enter the long-distance market and put pressure on the company's core business. The company is raising cash through some divestitures and will enter 1998 with a very strong balance sheet. Its stock is up in reaction to Mr. Armstrong's hiring and to talk of radical cost-cutting. That should broaden the company's options in terms of acquisitions and joint ventures. We see that as something of a mixed blessing, however. The mixture of radical cost cutting and culture change with catch-up in several key areas is a tough one to pull off in a very short time-frame. Assimilating acquisitions at the same time complicates the equation still further, particularly for a company like AT&T whose track record both in acquisitions and outside its core long-

distance business is far from terrific. Thus, ventures and acquisitions that are intended to jump-start businesses may, instead, add to the problems. It will also be difficult to cut cost and deliver earnings without jeopardizing the company's future. Again, Mr. Armstrong is aware of that danger and indicates that he will not sacrifice the future for the present, but at the same time he indicates an intention of growing 1998 earnings. We are concerned, nevertheless, that this will be a tough promise to keep. It is not clear to us that AT&T does, in fact, have two years before it has to worry about serious pressure on the core, at least in some key states. It is clear that AT&T is way behind in local entry and will not solve its problems easily or cheaply. Thus, we believe the company will be walking a very thin tightrope over the next two years, while juggling an enormous number of balls. Even with Mr. Armstrong's track record and obvious competence, it will be a tough balancing act.

Strengthening the balance sheet:

AT&T's CFO, Dan Somers, announced the sale of the Universal Card, which will close by the end of first quarter 1998 and add about \$3.5 billion in cash to AT&T's balance sheet. By that point, the sale of the customer care business should also be complete. In all, we estimate that the two deals should add roughly \$4 billion to what is being described as AT&T's "war chest." The company is clearly considering acquisitions, but no specific ones were discussed at our meeting.

1998 earnings expectations:

Mr. Somers indicated that he believes AT&T should be able to grow earnings every quarter, sequentially, throughout 1998. We are not sure that is the right goal for AT&T right now, given how little time it has to take share in the U.S. local business, to cement international alliances and develop a suite of global products, and to invest in its infrastructure and Internet business.

Key initiatives:

Mr. Armstrong outlined a number of key initiatives: local entry, the development of global products and strong global alliances, cost cutting-especially in the SG&A category-and reduction of bureaucracy and cycle times in decision-making, growth of Internet, growth of the Solutions business, and development of a network architecture that can evolve as technology changes.

Local entry:

Mr. Armstrong is clearly unhappy with where AT&T is in the local business now. He said that the company has invested about \$4 billion in this area and has \$65 million in revenues. He considers resale to be "a fool's errand" because it is so unprofitable, does not see the unbundled-network-element platform (UNEP) as an option at the moment thanks to the 8th Circuit Appeals Court, and does not have much in place at

the moment in the way of local facilities. The company expects to lay out its strategy in late January, but at least one part seemed apparent yesterday. The company plans to focus heavily on large business. It will also address the high-end of the small-business market, and to some extent the high-end residential market. That strategy is logical, but will not be easy to execute.

To begin with, the numbers Mr. Armstrong laid out are shocking when compared with some of AT&T's small competitors. Teleport, for example, has spent less than \$2 billion and will have about \$.5 billion in revenues this year. It is getting those revenues over its own facilities in 65 markets. About half that revenue comes from providing switched local service. Like all the CLECs (competitive local exchange carriers), AT&T has laid the blame on the LECs' "foot-dragging" in opening local markets. It has blamed the failure of its Digital Link product, for example, on the lack of permanent number portability. It claims that large businesses, which are the target market for that product, want to keep their direct-inward-dial numbers and that the LECs are making that impossible. While there is no doubt truth to the claim that the LECs are not welcoming competitors with open arms, it is hard to ignore the fact that Teleport, MFS/Worldcom and many other small players have dealt with the same local telcos (LECs) as AT&T, without AT&T's clout but with far greater success.

AT&T has not focused on placing facilities, and in Chicago, the one market where it has, it has done so at a cost that is a large multiple of the cost smaller CLECs spend in each market to much greater effect. AT&T is used to a national market and has attempted to approach local in the same way in its systems design. It has tried to force a single OSS (operations-support system) out of all the LECs, and has only recently resigned itself to dealing with differences among them. Its local billing systems are a disaster so far, at least for residential customers. It is not billing some at all for service, and grossly overbilling others. Its systems appear too inflexible at this point to accommodate the very different pricing packages that appear in each market. AT&T has attempted to address the large-business local market with Digital Link, which provides direct connections from the customer's PBX (in-building switch) to AT&T's switch. It has had very little success, and blames the problem on the lack of availability of permanent number portability. While it may be more difficult to use interim number portability than permanent number portability, it is possible to do so. AT&T has chosen not to invest resources in interim solutions, even in addressing a market segment that should be very lucrative. In all fairness, the challenges AT&T faces are on a whole different scale than those of any other CLEC. But then, so are its resources, and it has clearly not used them well enough so far to take advantage of the very short window of opportunity the company has before it faces Regional Bell competition in long-distance. We believe that the FCC will let a few states into long distance in 1998 and many in 1999. Enough non-AT&T entry into local is building that it will become increasingly difficult to keep the Bells out. Allowing time for court appeals, we expect substantial actual Regional Bell entry into long-distance in 1999.

It is not easy to see remedies for AT&T that can make a big difference in its local entry in 1998. One option that is rumored to be under consideration is the acquisition of Teleport. Given Teleport's share price, AT&T would have to pay 6-8 times the cost of the underlying facilities. Several arguments can be made for the acquisition. One is that AT&T seems to build its own facilities at a multiple of the cost at which Teleport does, and therefore will not be overpaying relative to what it would spend on its own to get facilities it should ultimately own. Another is that it is worth buying the assets simply to keep them from going into other hands. A far more appealing and valid argument is that AT&T has the large customer base with which to leverage the Teleport assets and should be able to generate a cash flow that justifies the price. But even if the price can be justified, there is no assurance that Teleport solve AT&T's timing problem.

The primary issue, of course, is whether Teleport will accelerate AT&T's entry into the local market beyond what it can accomplish with Digital Link. This is far from obvious. Permanent number portability is no more available to Teleport than it is to AT&T. Teleport will not solve AT&T's own systems problems, and may, instead, exacerbate them. Teleport has its own systems, but it is unlikely that they can be scaled up easily to accommodate AT&T's size. Instead, the acquisition would most likely present AT&T with yet another OSS development or integration issue. That is doable, but time-consuming. The deal itself is bound to take time to consummate, and the integration of Teleport into AT&T will be time-consuming after that. We believe an AT&T/Teleport deal could get regulatory approval, but it will not be a breeze, precisely because AT&T would be eliminating an effective independent competitor. Mr. Armstrong commented that he believes MCI/Worldcom will take till mid-'99 to close and assimilate. It is not easy to see an AT&T/Teleport union up and running effectively sooner. Our concern is not that AT&T can't afford or justify the purchase price of Teleport, but that the merger will not solve AT&T's problems in the local market fast enough. The acquisition of a wireless bypass company like Winstar or Teligent, while less expensive, presents many of the same issues. Thus, at least on the local front, we do not see acquisitions making it possible for AT&T to get done what it needs, which is to take substantial market share from the LECs, fast enough.

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11:07am EST 19-Dec-97 Janney Montgomery Scott
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Local residential presents problems that are even greater. For the moment, UNEP is not available as an option. Even if it becomes available soon, as we think it will in some states, it does not do all that much for residential. Average revenue per line for residential is in the ballpark of \$30. A rebundled line would cost over \$20 even in Texas, which is proposing deep discounts, and in most states the price would be closer to \$30, based on element prices set so far. For the average line, UNEP is no more cost effective than resale. For the high-end residential market, UNEP is far more appealing,

because it makes cream-skimming possible. Facilities-based-bypass technologies are not cost-effective at this point. Fixed-wireless or digital-cellular or PCS may become cost effective at some point, but are not at this point. Cable-telephony has not materialized in any volume, because it is not cost effective. Cable upgrades have a high fixed-cost component, and require either high penetration or high revenue per subscriber to justify them. AT&T's ability to bring in residential customers would certainly help justify cable upgrades, but would probably not bring the cost of the average line below that of UNEP. That makes a cable upgrade much less appealing from AT&T's perspective than UNEP, because it can cream-skim with UNEP but not with a cable upgrade. If it or its partners spend the fixed cost, they need every subscriber they can get to justify it. They can't just go for the high end. AT&T is already struggling in the long-distance business with a large, unprofitable piece of the consumer base. Mr. Armstrong indicated that AT&T loses \$.5 billion on 15 million of its 80 million residential customers. He is not eager to expand the problem by going after low-end local consumers.

Finally, the idea of merging with a LEC has been raised by AT&T several times. We do not believe that is a realistic option for the next few years for regulatory reasons. Until there is substantial local competition, we do not expect regulators to be willing to eliminate the one company that should be best able to compete with the LEC. There will be particular concern about eliminating AT&T as a potential competitor in the residential market. In fact, even without a Bell merger, we expect AT&T's strategy of simply cream-skimming residential to be most unwelcome in Washington, although it makes perfect sense to Wall Street.

Thus, we do not see easy or rapid external solutions to AT&T's local problems through acquisitions or partnerships. That is not to say that it does not need to form some, or that it cannot afford them financially, particularly if it can keep its stock price up. It is simply unlikely that they will position AT&T to take a large chunk of profitable share out of the LECs before the RBOCs can get into long-distance and bring AT&T's own core business and cash flow under pressure.

International:

Mr. Armstrong indicated that he believes AT&T lacks a strong global product suite. He is interested in developing that, and in doing so as part of a set of strong alliances rather than the loose ones AT&T has formed in the past. International clearly presents enormous opportunities right now. Many markets will open in 1998. The MCI/BT/Telefonica alliance has been destabilized by the MCI/Worldcom merger and AT&T has an opportunity to acquire some key new partners. We see a lot of opportunity here for AT&T, but note that integrating new foreign partnerships while dealing with the local issues will not be easy, particularly if an actual merger is involved.

Cost Cutting:

While Mr. Armstrong did not provide an actual target, he made it clear that he plans to cut SG&A heavily to bring it down from its current level of 29.6% to the low-twenties. He indicated that he believes cost cutting can provide the funds for AT&T's other initiatives. He also highlighted that he is trying to reduce bureaucracy as well as cost, to reduce indecision and cut cycle-times. All of that is needed, particularly shorter cycle times for both decision-making and implementation. If AT&T had several years before it faced competition in its core business, we would be comfortable that this strategy can really work. However, AT&T needs to move very quickly on several fronts, especially local, and will need to defend its core business within two years. It is not clear that all the systems development that is left, as well as the product development and marketing and sales that will be needed for the local market, can be done while cutting costs and growing earnings over the next year or two. Thus, AT&T is in something of a bind. It must show earnings improvement to keep up its stock to have a good currency for acquisitions. At the same time, it cannot afford to mortgage its future by shortchanging a huge catch-up effort it must make on several fronts.

IP, Solutions, Infrastructure:

Mr. Armstrong spoke eloquently about the opportunities presented by both the Internet and the Solutions business. These do, indeed, present high growth areas. The Internet in particular may well be an area in which AT&T can probably accelerate its growth through acquisition. The company is also looking to upgrade its network infrastructure, to provide the flexibility to evolve as technologies change. AT&T needs to participate in the Internet for defensive as well as offensive reasons. The Internet is beginning to displace fax traffic to some extent and to take some voice traffic, particularly international traffic. AT&T cannot afford to have that process accelerate and threaten its long-distance business without being a player on the Internet side.

Summary:

We are maintaining our HOLD rating on AT&T. We believe the company will be one of the survivors in the telecom industry when the dust settles after the next few years' competitive battles. However, we also believe that the next few years will be tough, and that better opportunities to buy the stock are likely to come. It will be enormously difficult to pull off the act of balancing short vs. long-term earnings, to integrate acquisitions while fundamentally changing the culture of the core, all within a window of no more than two years.

The Analyst covering this stock or a department supervisor has an investment position.

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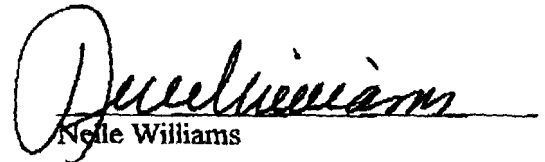
CERTIFICATE OF SERVICE

I hereby certify that I have this 5th day of January, 1998 served the following parties to this action with a copy of the foregoing PETITION FOR CONDITIONAL APPROVAL OF THE APPLICATIONS OF WORLDCOM, INC. FOR TRANSFERS OF CONTROL OF MCI COMMUNICATIONS CORPORATION by placing a true and correct copy of the same in the United States Mail, postage prepaid, addressed to the parties listed below.

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